

# **HMC-600NFA-NC+MU4 Operation Instruction**



**SOCO MACHINERY CO., LTD.**

**#7, 14TH RD. TAICHUNG INDUSTRIAL PARK. TAICHUNG TAIWAN**

**TEL: 886-4-23591888 FAX: 886-4-23592386**

**E-MAIL: [sales@soco.com.tw](mailto:sales@soco.com.tw)**

**Website: <http://www.soco.com.tw>**

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# 1. Safety Information

## 1.1 Introduction

- ◆ Keep the machine away from any potential explosive environments.
- ◆ Do not attempt to operate the machine unless you have been trained and qualified by your supervisor.
- ◆ Employers should instruct employees to follow the safety standards which are nationally recognized authorities on the safety requirements for construction, care, and use of the machine.
- ◆ Operators must be familiar with the machine before using it, in other words operators must know this manual very well.
- ◆ Maintain the machine must be executed by qualified workers.
- ◆ It is not allowable to alter any components of the machine.  
Use only accessories that are recommended by the manufacturer for your model.
- ◆ Do not use harmful materials catalog in this manual.
- ◆ Never press any button on the control panel when anyone

stays in the dangerous zone.

## 1.2 Dangerous zones around the system

Figure 1-1 shows dangerous zones which are working space of the machine; operators' operate position, and operators' necessary working zones. There is at least 1 m distance away from the machine to guaranty safety operation.

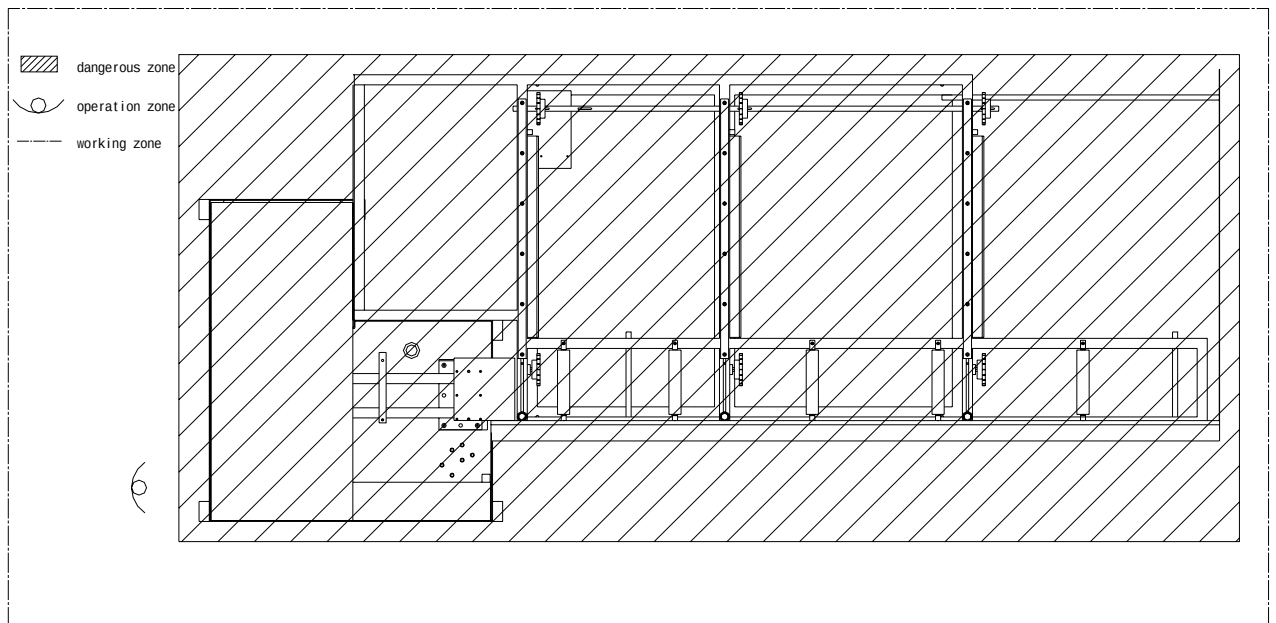


Figure 1-1 Dangerous zones around the machine

## 1.3 Safety label

Figure 1-2 shows an example of the safety label position on the machine. It would be hard to identify the safety labels if

customers change positions of any safety labels.

Never remove any safety labels from the machine.

SOCO machinery co., ltd. will not be responsible for the safety of the machine if customers don't respect to precautions against danger.

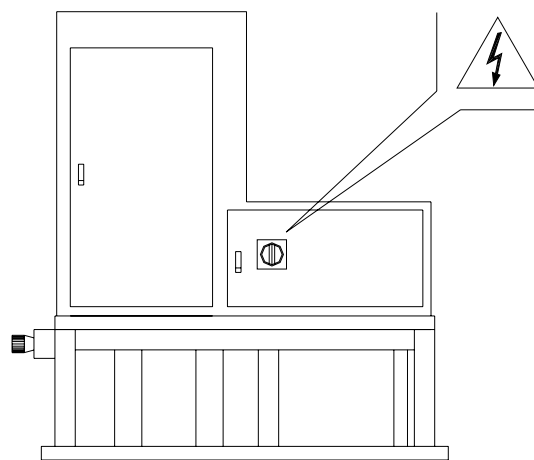
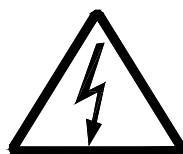


Figure 1-2 a safety label

Never remove any safety labels from the machine.

The meaning of the following safety label is that it could be to release ultra high voltage. Please cut off main power supply before open it.



## 1.4 Safety device

### 1.4.1 Emergency stop button

- a. The emergency stop button is installed on the machine.
- b. Press the emergency stop button is suitable for immediate deactivation of an application in an emergency. The emergency stop button connected with a security circuit which controls all movable parts.
- c. When the machine operates every 200 hours, you need to check the function of emergency stop button. Please follow the correct check procedure, and the procedure shows as the following:
  - I. turn on the power
  - II. press the emergency stop button
  - III. release the emergency stop button

When you execute the step II, the whole system must be shut down immediately. If it is not, you should turn off the power, and you can't reboot the machine.

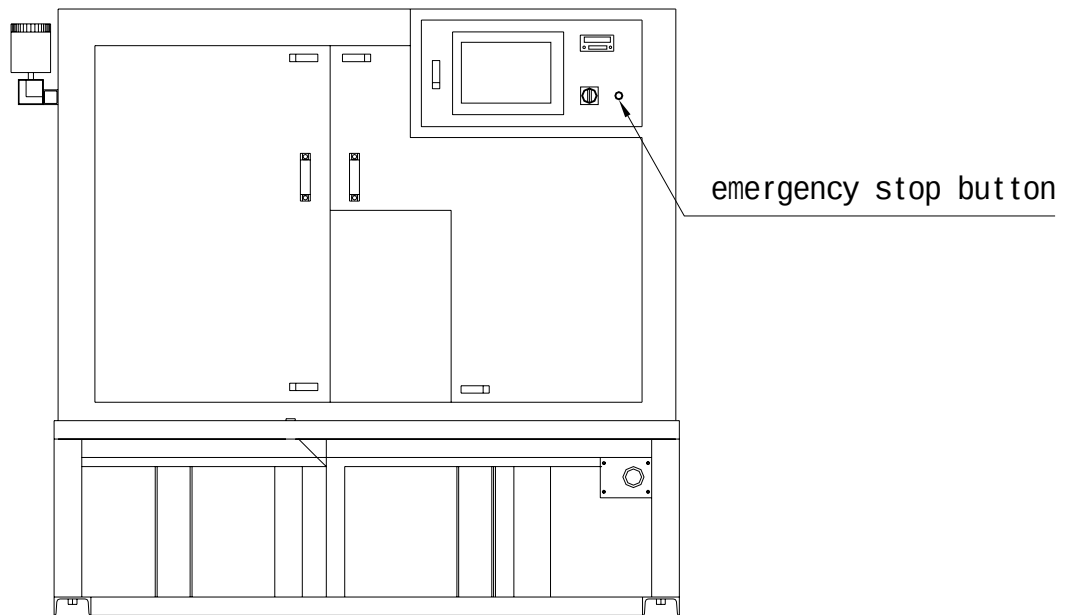


Figure 1-3 The emergency stop button

## 1.5 Personal safety instructions

Stay alert. Do not use machine while tired or under the influence of drugs, alcohol or medication. Dress properly. Do not wear loose clothing, jewelry, bracelets, watches, rings or necklaces. Contain long hair. Keep your hair, clothing and gloves away from moving parts. It is recommended to wear protective goggles, gloves, sturdy non-slipping shoes and an apron to avoid any accident when operating the machine.

## 1.6 Limitations

- This machine can cut aluminum and aluminum alloy only.

- It is not suitable for working with the machine if procedures or materials do not be listed in this manual. SOCO machinery co., ltd. will not be responsible for the any influence of the machine if customers disobey the rules.
- If customers want to work with other material, they need to examine the request report and get approval from SOCO machinery co., ltd.
- SOCO machinery co., ltd. will not be responsible for error or improper manipulation. (for instance: Use accessories that are not recommended by SOCO machinery co., ltd., or change the system software by yourself.)
- Supervisors of the machine need to obey the following safety instruction.
  - Supervisors need to investigate the status of operators and judge if they are suitable for manipulation.
  - Deeply understanding and managing this manual and general safety rules.
  - We can not guarantee that people can prevent any injury even though they read the safety instruction.

## 1.7 Environment

The machine must be installed in the normal environment where exists no overly hot corrosive steam or any source.

## 2. General Specifications

### 2.1 HMC-600NFA-NC specifications

| HMC-600NFA-NC                 |                                                                                                        |                   |
|-------------------------------|--------------------------------------------------------------------------------------------------------|-------------------|
| Item                          | Description                                                                                            |                   |
| sawing capacity<br>(aluminum) |                       | Ø120 mm           |
|                               |                       | Ø204 mm           |
|                               |                       | 175×175 mm        |
|                               |                       | 175×200 mm        |
| delivery                      | holds by oil pressure, drives by AC server motor, orientate by NC system, and deliver 550 mm at a time |                   |
| sawing speed                  | stepless adjustment by oil pressure system                                                             |                   |
| main motor                    | AC motor 15 HP/4P                                                                                      |                   |
| saw blade                     | tungsten carbide saw blade<br>Ø400 mm - Ø610 mm, shaft hole Ø25.4 mm                                   |                   |
| speed of spindle              | standard:                                                                                              | 1740 RPM/2780RPM  |
|                               | included a frequency converter:                                                                        | 1500 RPM/4800 RPM |

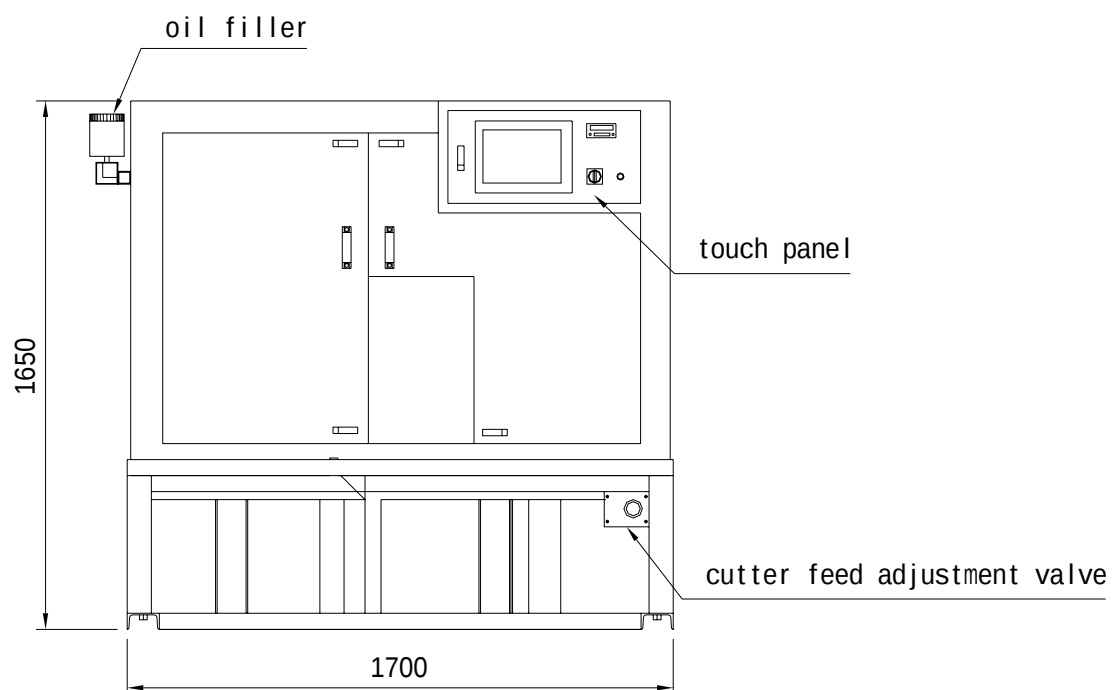
|                      |                                                                                                        |
|----------------------|--------------------------------------------------------------------------------------------------------|
| lubrication          | oil moisture system                                                                                    |
| oil pressure system  | AC motor 3HP/4P, drain out 20L/20L double connection pump (working pressure 30-50 kg/cm <sup>2</sup> ) |
| dimensions           | 200×185×185 (cm)                                                                                       |
| weight               | 1500 kgf                                                                                               |
| optional accessories | dust collecting fan                                                                                    |
|                      | frequency converter                                                                                    |
|                      | export shelf                                                                                           |

## 2.2 MU4 specifications

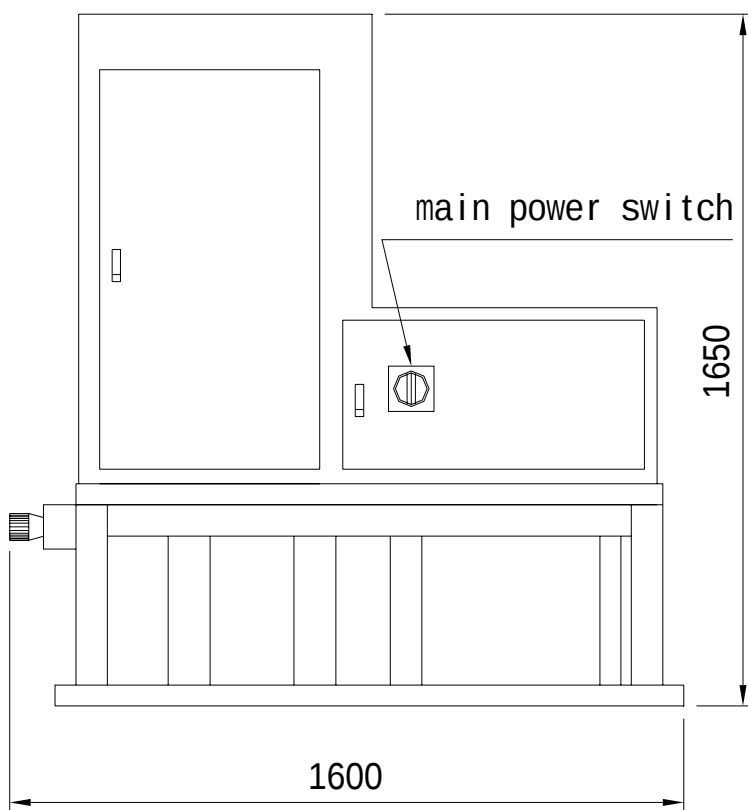
| MU4                                                                                |                                            |
|------------------------------------------------------------------------------------|--------------------------------------------|
| Item                                                                               | Description                                |
| maximum length of material                                                         | 4 m                                        |
| material storage station<br>(you need to assign one<br>when you order the machine) | <130 mm, it can lay up 5 sections          |
|                                                                                    | 130 mm~160 mm, it can lay up 4<br>sections |
|                                                                                    | 160 mm~208 mm, it can lay up 3<br>sections |
| driving motor                                                                      | 1/4 HP                                     |
| maximum loading capacity                                                           | 2500 kg                                    |
| dimensions (mm)                                                                    | 4500×2000×1050<br>(width×length×height)    |

### 3. Machine Exterior and Main Components

#### 3.1 Front view

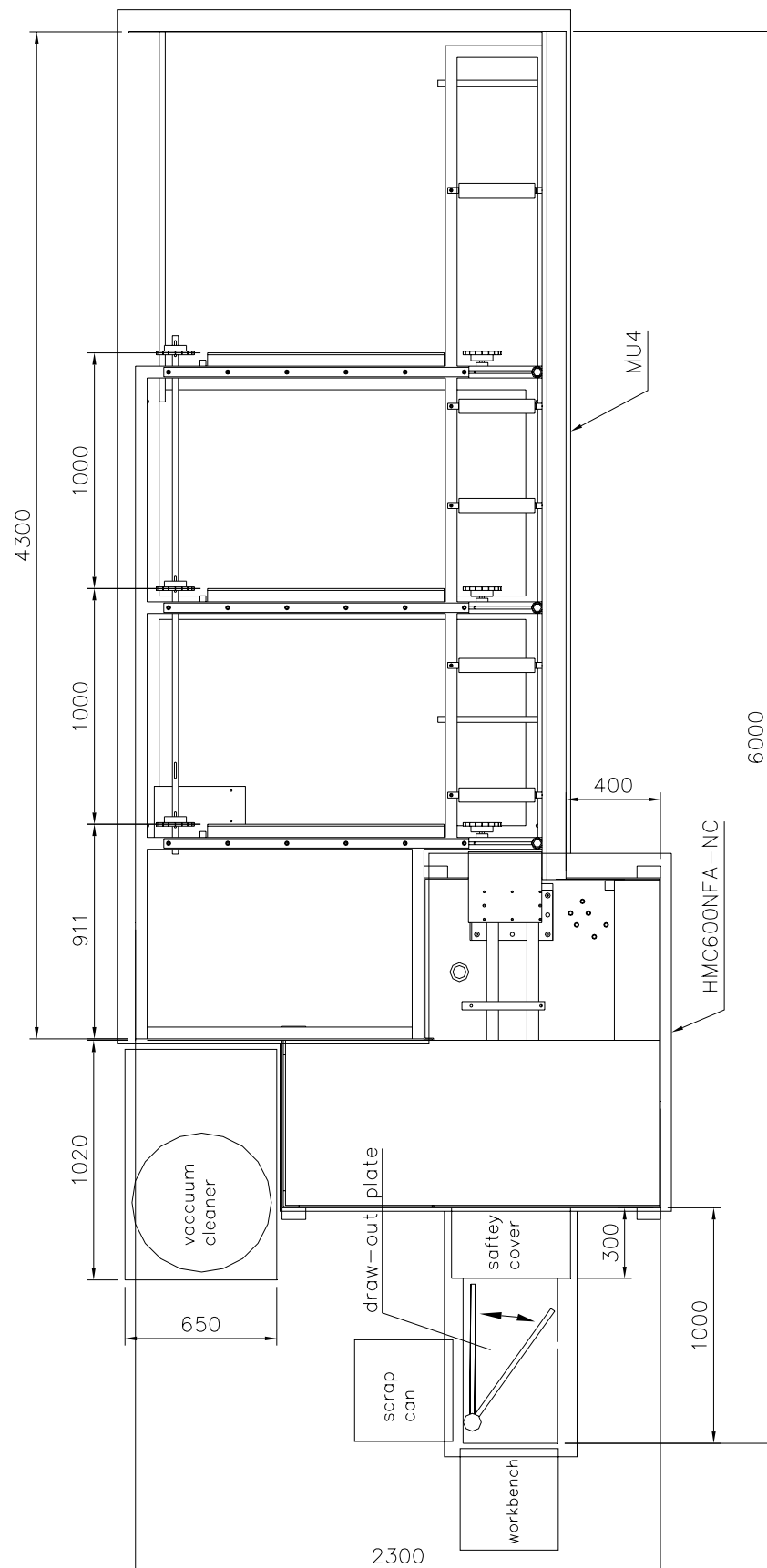


#### 3.2 Side view



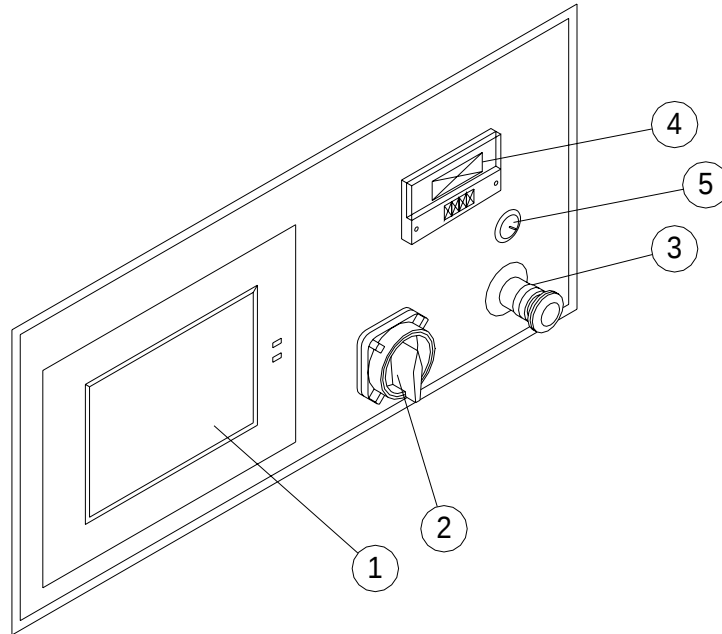
### 3.3 Machine layout

MU4+HMC600NFA—NC  
layout



### 3.4 Control panel

There is a control panel which shows positions of all components at upper right of the machine.



① touch panel

It shows actions of the machine.

② ain motor power

It can turn on/off the main motor.

③ mergency stop button

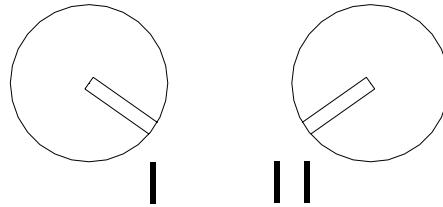
It is designed for immediate deactivation of an application in an emergency.

④ verload circuit breaker

It can setup up overload current, and turn off the main

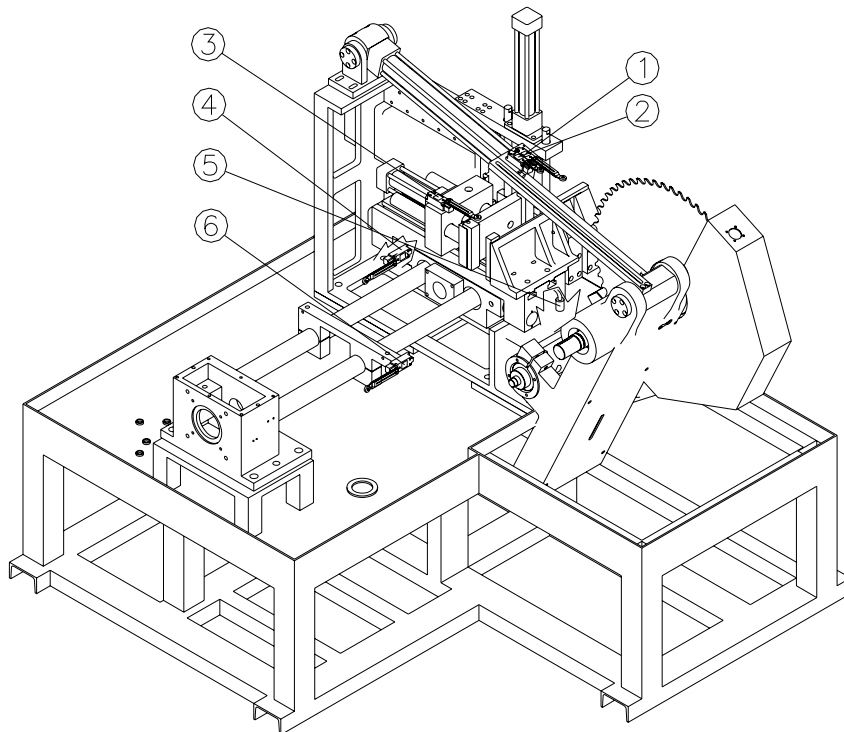
motor when current exceeds the set value.

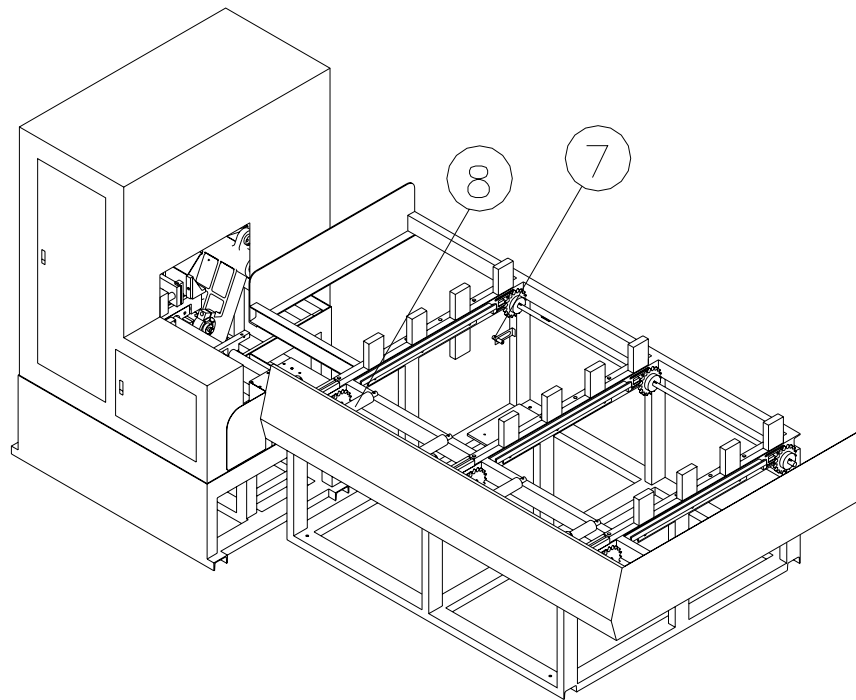
⑤ security key



It is normal mode for general operation when it is in position I, and it is locked mode for permanent maintain when it is in position II

### 3.5 Sensors locations





- ① feeding limitation (X1)
- ② withdrawal limitation (X0)
- ③ out of material stop (X6)
- ④ delivery forward limitation (X4)
- ⑤ origin of delivery shaft (D0G)
- ⑥ delivery backward limitation (X3)
- ⑦ delivery frame orientation point (X16)
- ⑧ delivery frame forward limitation (X22)

feeding limitation (X1)

withdrawal limitation (X0)



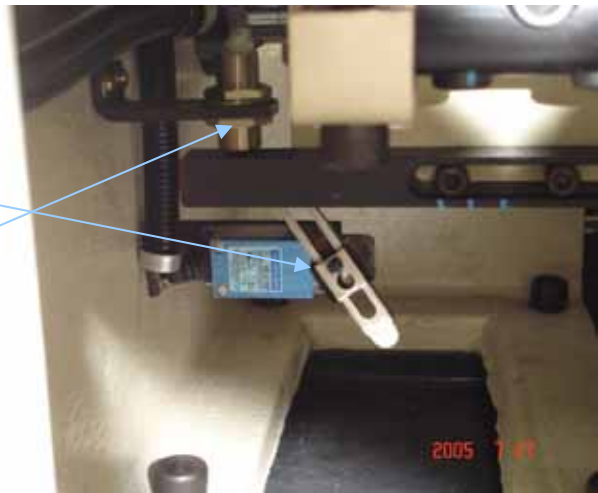
out of material stop (X6)



delivery forward

limitation (X4)

origin of delivery shaft (D0G)



delivery frame orientation  
point (X16)



delivery frame forward  
limitation (X22)



## **4. Machine Installation**

Before the machine installation, you need to read the illustration carefully. If you have any question please contact with your retailer for quickly and properly service.

### **4.1 Take out and inspect**

1. Please inspect the package wooden case and plastic bags of the machine for their completeness. If you discover any damage, you should request indemnification from the insurance company.
2. Please check up the machine and accessories according to the package sheet. If you discover any shortage of them, you should contact with your retailer for handling.

### **4.2 Transport and assemble**

#### **4.2.1 Prepare for moving the machine**

Please obey the following steps for moving the machine

- a. lock all components
- b. release all related adjustment screws
- c. let machine horizontal by regulating adjustment screws
- d. fix the power line, and key of the control panel by suitable

adhesive tape

#### **4.2.2 Move the machine**

Use a fork-lift truck to upraise the machine. The operator must have qualification and capability to do the job. Lift up the machine for several centimeters and check up the balance loading. After the confirmation the balance loading, lift up the machine. Please make sure the capability of the fork-lift truck to upraise the machine. When moving and installing the machine, there are at least two workers, one operates the fork-lift truck, and the other one checks the position for preventing the collision. Please keep a safety distance when the machine is arisen over 50 cm. Please pay the most attention when you handle the procedure.

#### **4.2.3 Installation**

It must have enough space for machine installations that can avoid any interfere from moving the machine. Actual dimensions of the machine are shown in sections 3.1, and 3.2. Please obey the following steps for installation the machine:

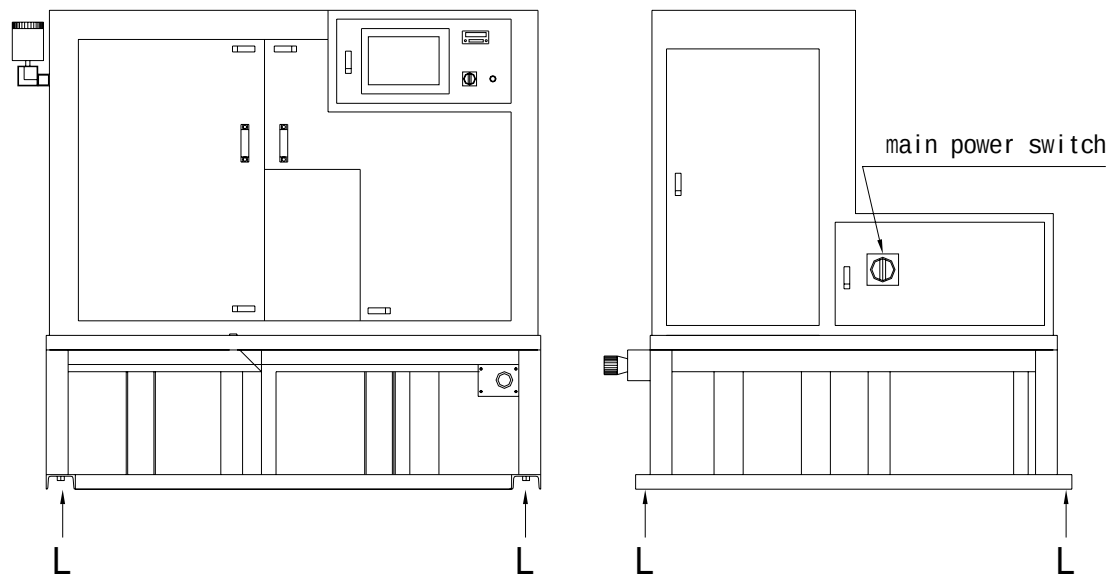


Figure 4-2 Locations of horizontal adjustment screws

- a. please adjust the machine to horizontal by 5 screws as indicated in Figure 4-2
- b. please fix screws after adjustment

### 4.3 Add hydraulic pressure oil

There is a control panel which shows positions of all components at upper right of the machine.

1. Please add hydraulic pressure oil which is listed as following about 100 liters.

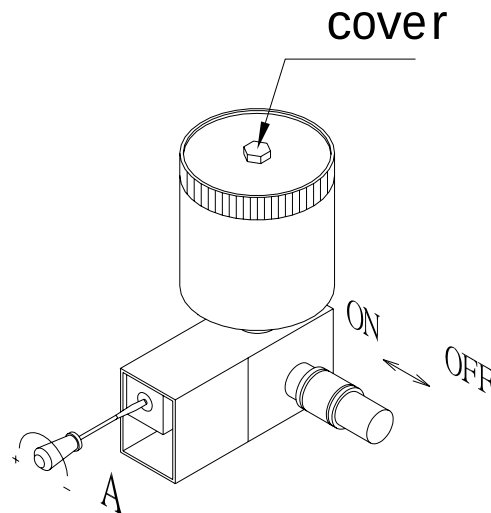
- ◆ VISCOUTY ISO. VG46
- ◆ MITSUBISHI DIAMOND HYD46
- ◆ SHELL TERAS OIL C46

◆ SHOWA SHOSEKI JH46

◆ CHINA PETROLEUM R46

2. Let the oil level at the middle position of the oil gauge

#### 4.4 Add the cutting oil



1. Please open cover which is shown above and add cutting oil (please use FUCHS ECOCUT SE 10 or COOLUBE 2210)
2. Adjust the quantity of oil spray by the screwdriver which is indicated A in above figure (+: increase, -: decrease)
3. On/off switch is shown in the above figure

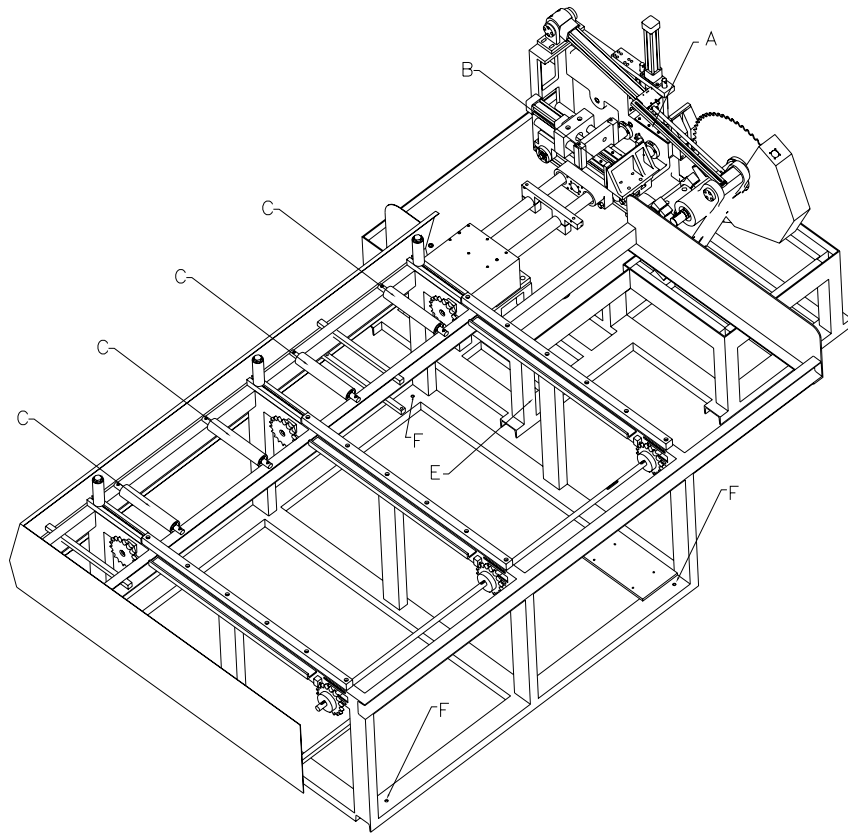
#### 4.5 Connect power supply cable

Caution: Only qualified technician can do this job. Don't install the saw blade at main spindle when you check the rotation direction of the main spindle.

1. Please make sure the main switch at OFF position before you connect power supply cable.
2. Specification of power supply (ex. voltage, ampere, and safety fuse) must fit requirements of the machine.
3. Connect the main power supply cable the check the correctness of the connection by following steps:
  - a. turn on the main power, and main operation menu shows in touch panel
  - b. select “ENGLISH” and then touch panel shows the unit page
  - c. select “Metric” and then touch panel shows the origin reset page
  - d. select “Start” button of hydraulic pressure pump and then hydraulic pressure pump starts
  - e. check the rotation direction of the pump
  - f. if the direction is not correct, exchange two wires of the power supply (total three wires), and check the direction again

#### **4.6 Install delivery frame and adjust**

#### 4.6.1 Install



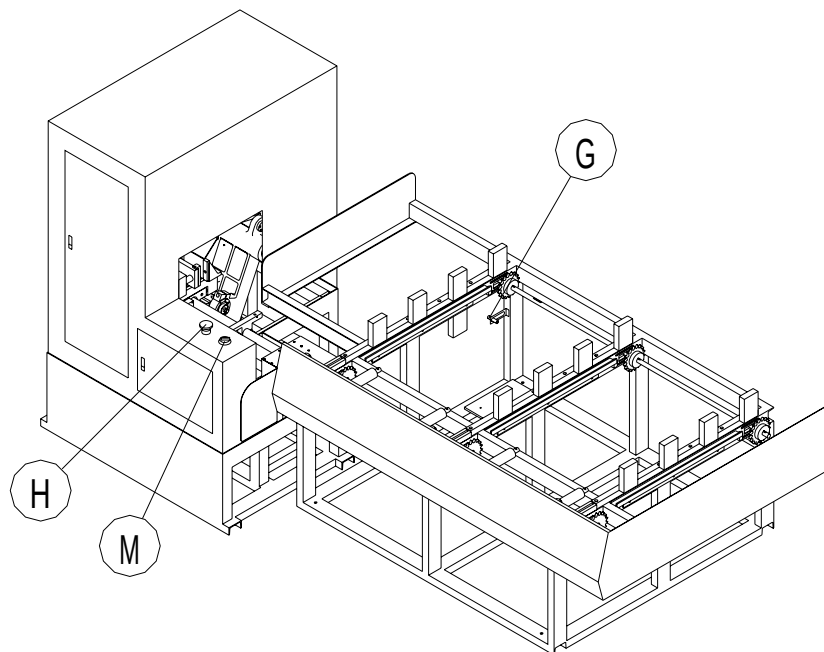
- a. there is a plate at E, move the plate to fit with machine station
- b. adjust screws of F (total four screws), and let the plane that is constructed by the roller is identical with plane which is constituted by A, and B plates
- c. put the work piece in the roller C, then work piece slips to plane B slowly (fit the plane, but not collide the plane), and

then work piece slips to plane A (fit the plane, but not collide the plane)

- d. finish the horizontal adjustment if all requirements are achieved, if it can not confirm the requirement that you need to do adjustment again

#### 4.6.2 Adjust

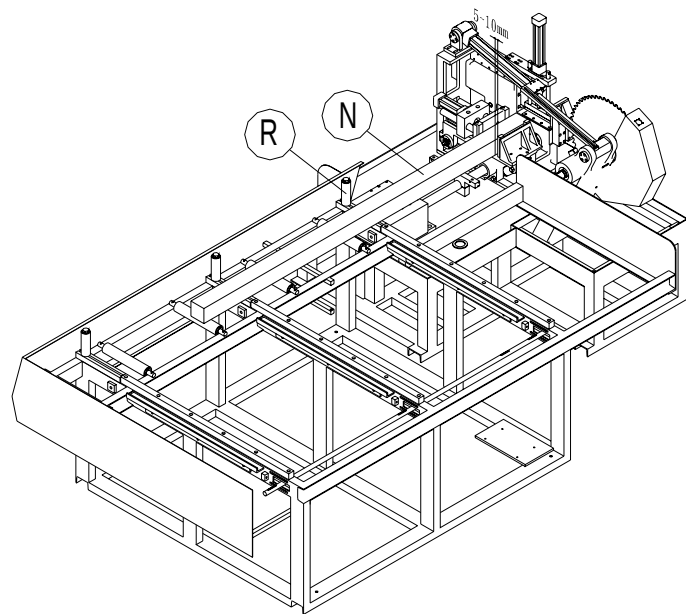
It can make suitable adjustment by ⑥ (X16) which is shown in the following figure according to weights of different work pieces.



- a. put work pieces and then rotate ⑤ (right: forward, left: backward) that it can enable work pieces move forward or backward
- b. work pieces keep moving forward until they reach ④, and

check the position is suitable or not (when it stops moving  
that the work piece leave delivery frame)

- c. there is 5-10 mm between the work piece and tongs surface  
as shown below. Leave (R) 5 mm away the work piece  
then fix it. If the position is not suitable, please adjust (G)  
for correction.



## **5. Operation**

### **5.1 Purpose of the manual mode**

#### **5.1.1 Check any movable components**

For example: the clamp

- a. check the function of the oil pressure vat by inspection the opening/closing motion of the clamp
- b. check the function of the electromagnetic valve by inspection the opening/closing motion of the clamp
- c. adjust the clamp to the correct position
- d. replace the work piece

#### **5.1.2 Trouble shooting**

When there is any abnormal situation at automatic mode, please shunt down the machine. Change to the manual mode and find out the source which induces the failure.

**Caution: Never cut the material at manual mode. It induces any possible results without expectation.**

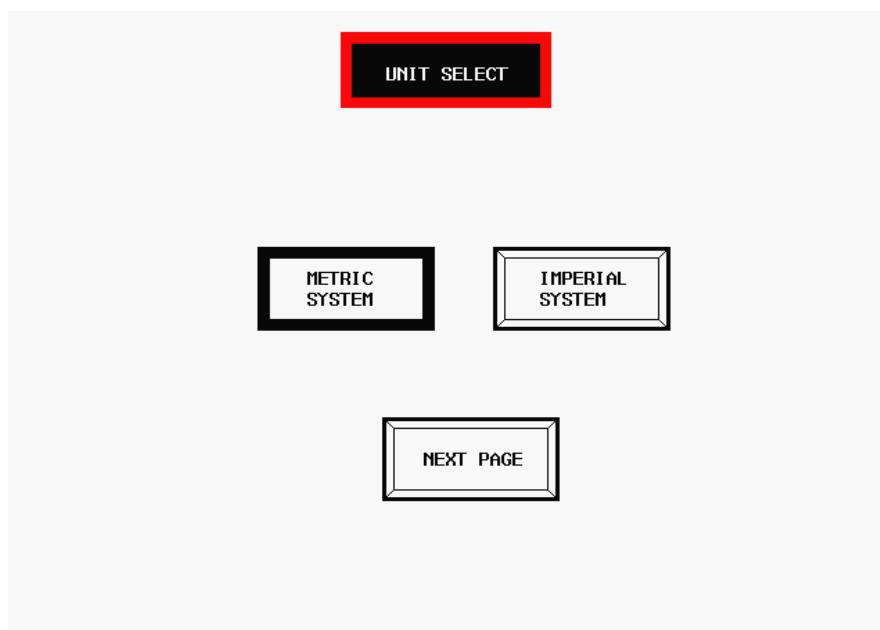
### **5.2 Control panel display**

#### **5.2.1 Main page**



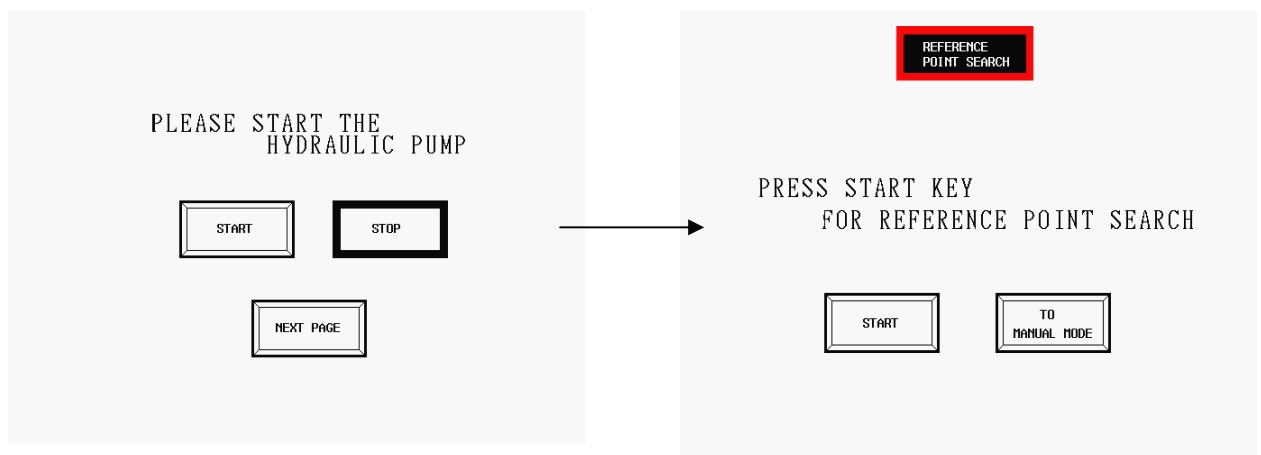
- a. turn on the power, the touch panel shows manufacturer, machine mode, and selectable language
- b. press **ENGLISH**, the touch panel shows the next page

### 5.2.2 Unit selection page



- a. **METRIC SYSTEM**: it uses “mm” as measurement unit  
when you press this button
- b. **IMPERIAL SYSTEM**: it uses “inch” as measurement unit  
when you press this button
- c. **NEXT PAGE**: touch panel shows next page when you press  
this button

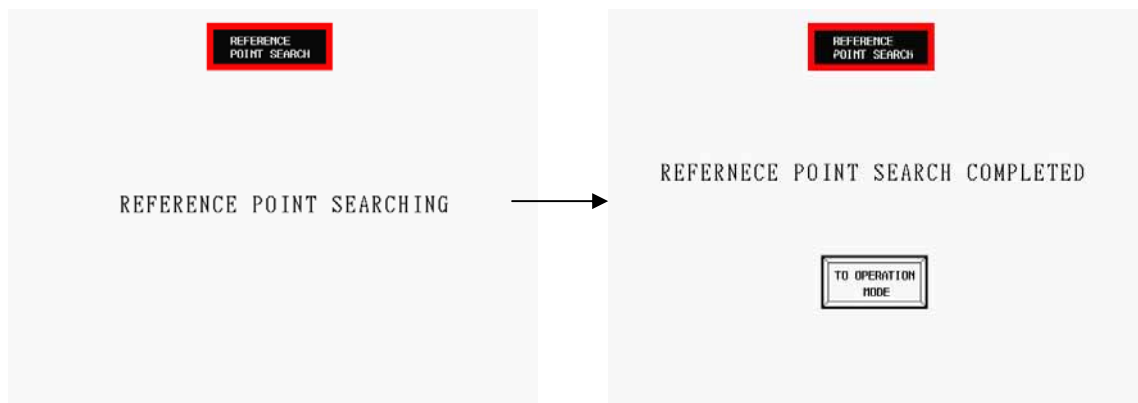
### 5.2.3 Search the reference point



- a. the reference point is the basis for measurement the length  
of the work piece
- b. **START**: it can reset the origin when you press the button

**Caution:** There is nothing on the working table to prevent collision.

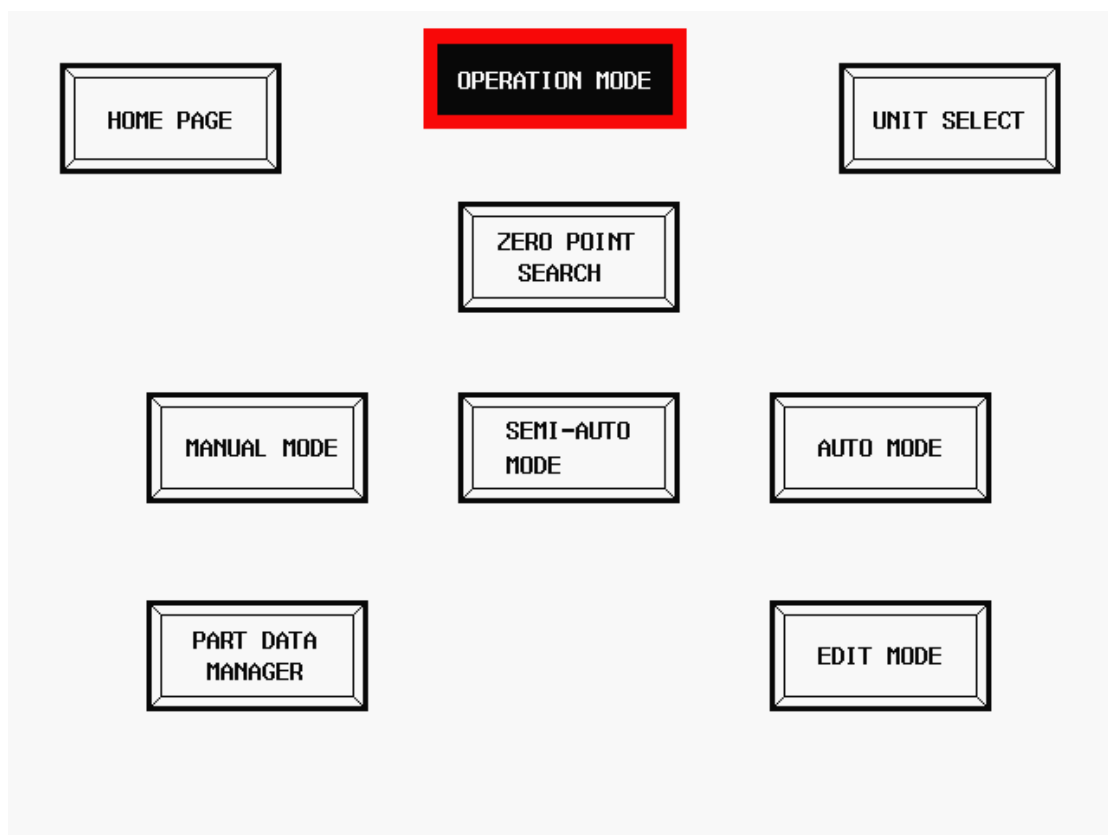
### 5.2.4 Finish the origin reset



Finish the reference point search that the touch panel shows the above figure.

- a. **TO OPERATION MODE**: the touch panel shows the operation mode when you press the button

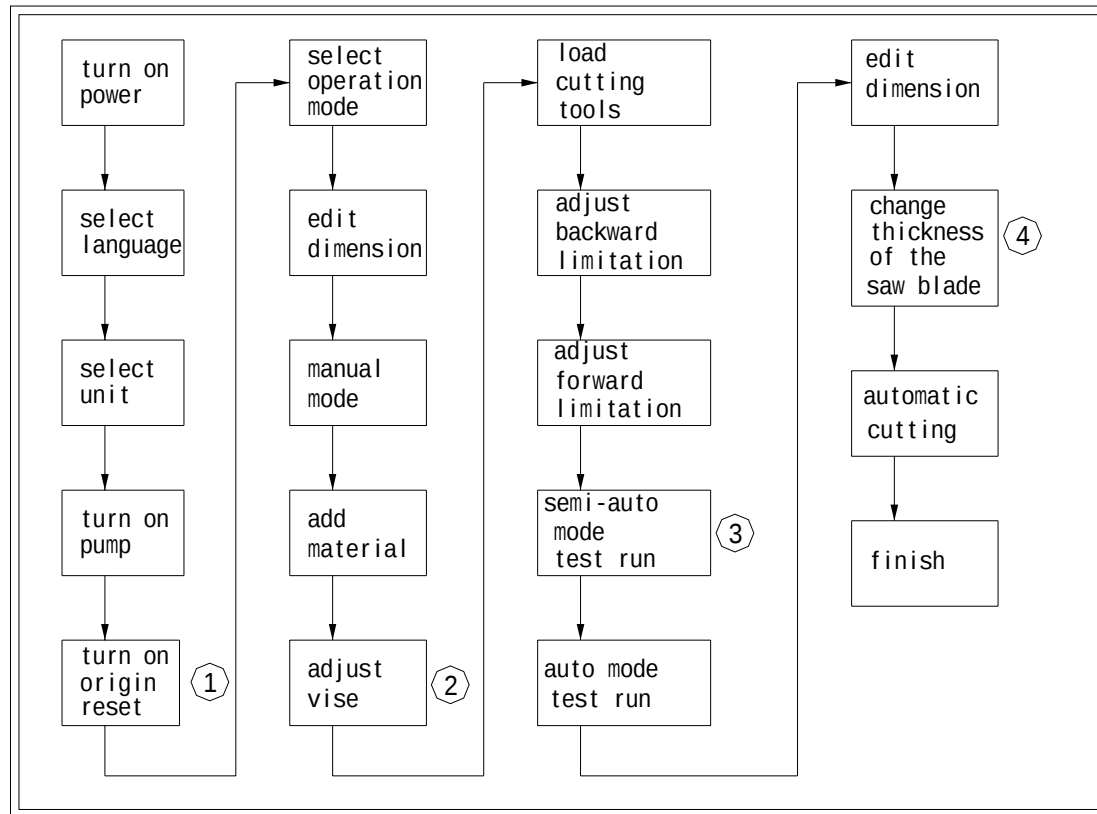
### 5.2.5 Operation mode page



- a. **MANUAL MODE**: the touch panel shows the manual mode page when you press the button
- b. **SEMI-AUTO MODE**: the touch panel shows the semi-auto page when you press the button
- c. **AUTO MODE**: the touch panel shows the auto page when you press the button
- d. **EDIT MODE**: the touch panel shows the dimension edit mode page when you press the button
- e. **HOME MODE**: the touch panel shows the home page which can change the unit, language, and etc. when you press the button
- f. **UNIT SELECT**: the touch panel shows the unit select page which can change the unit when you press the button
- g. **PART DATA SEARCH**: the touch panel shows the data management page which can store maximum 120 files when you press the button
- h. **ZERO POINT SEARCH**: the touch panel shows zero point search page that you can press the button when it is necessary

## 5.3 Detail description

### 5.3.1 Operation description

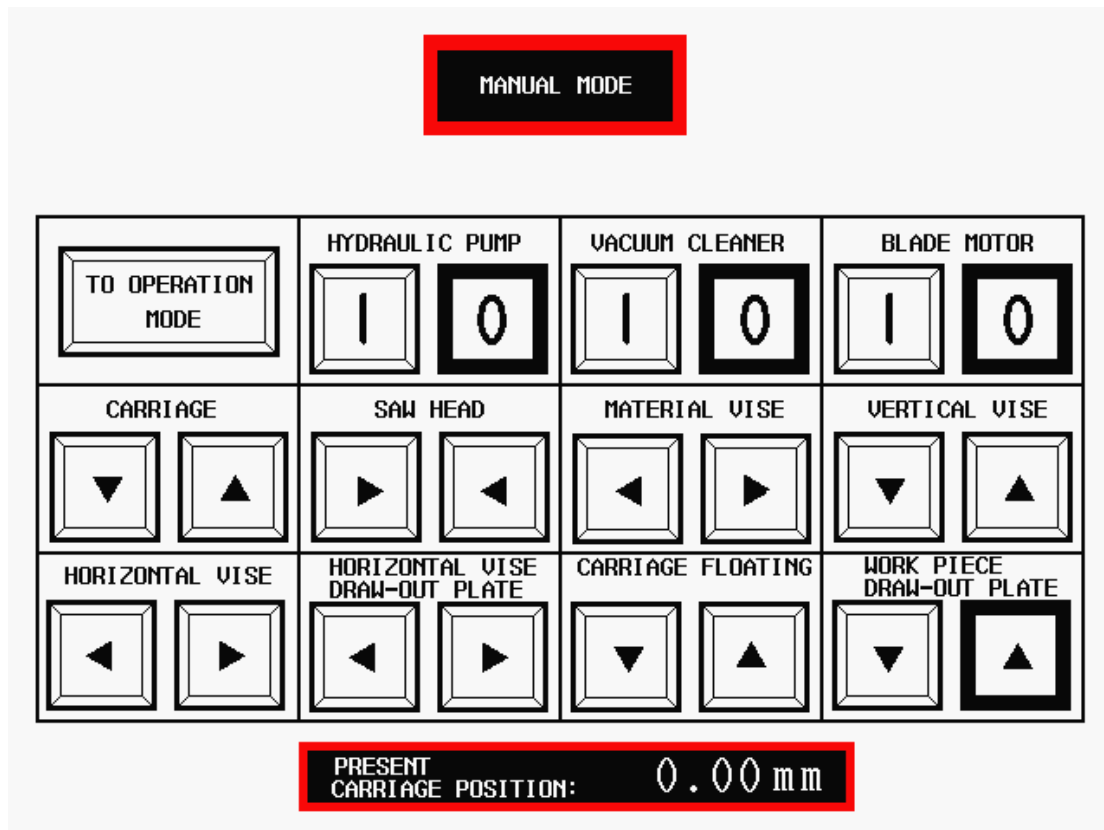


- ① Please note if there is any thing interference with the machine.
- ② Please note that work piece is 8 to 9 mm away from the material vise when it opens. Please make sure that all vises can clip work pieces.
- ③ At this moment, that work piece can't touch the saw blade.  
Check up the cutting area can cut the work piece.
- ④ Measures the length, if the length is X longer and then cuts down the thickness of the saw blade X. If the length is X shorter and

then add on the thickness of the saw blade X.

As shown in the following page, it shows the operation procedure by flow chart, and right side is the notice.

### 5.3.2 Manual mode page

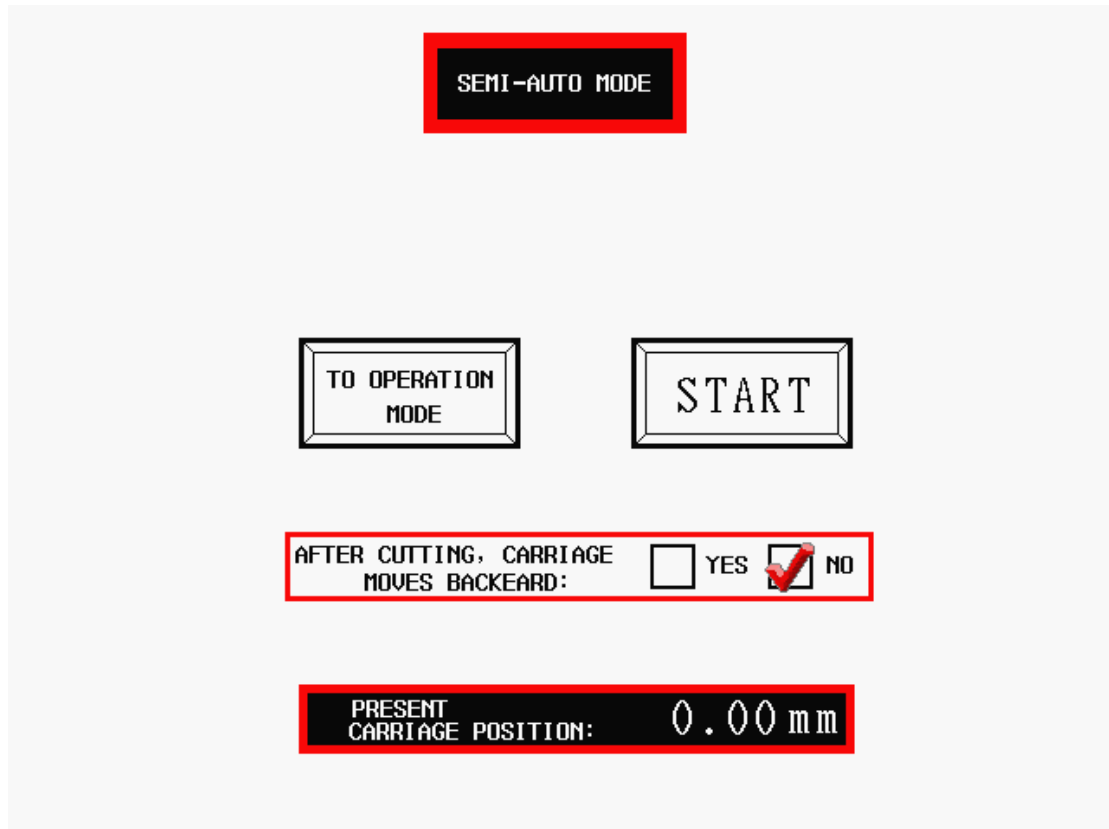


- TO OPERATION MODE**: the touch panel shows the operation mode when you press the button
- HYDRAULIC PUMP**: press **1** that can turn on the hydraulic pump, and press **0** that can turn off the hydraulic pump
- VACUUM CLEANER**: press **1** that can turn on the vacuum cleaner, and press **0** that can turn off the vacuum cleaner

- d. **BLADE MOTOR**: press **1** that can turn on the blade motor, and press **0** that can turn off the blade motor
- e. **CARRIAGE**: press **▼** that carriage moves forward, and press **▲** that carriage moves backward
- f. **SAW HEAD**: press **▶** that saw head moves forward, and press **◀** that saw head moves backward
- g. **MATERIAL VISE**: press **◀** that material vise releases objects, and press **▶** that material vise ties up objects
- h. **VERTICAL VISE**: press **▼** that vertical material vise releases objects, and press **▲** that vertical vise ties up objects
- i. **HORIZONTAL VISE**: press **◀** that horizontal vise releases objects, and press **▶** that horizontal vise ties up objects
- j. **HORIZONTAL VISE DRAW-OUT PLATE**: press **◀** that horizontal vise draw-out plate releases objects, and press **▶** that horizontal vise draw-out plate ties up objects
- k. **CARRIAGE FLOATING**: press **▼** that carriage floating moves down, and press **▲** that carriage floating moves up
- l. **WORK PIECE DRAW-OUT PLATE**: press **▼** that draws

out the work piece, and press  that returns to stand by

### 5.3.3 Semi-auto mode



- a. : the touch panel shows the operation mode when you press the button
- b. : press this button to start the semi-auto mode
- c. :  
press  carriage moves backward, press  carriage doesn't move backward

### 5.3.4 Auto mode

**AUTO MODE - 1**

EXECUTIVE FILE:

| No. | CUTTING LENGTH (mm) | PRESET QUANTITY | ACTUAL QUANTITY |   |
|-----|---------------------|-----------------|-----------------|---|
| 1   | 0000.00             | 0               | 00000           | Z |
| 2   | 0000.00             | 0               | 00000           | Z |
| 3   | 0000.00             | 0               | 00000           | Z |

PRESENT  
CARRIAGE POSITION: 0.00 mm

START

CYCLE STOP

TO OPERATION  
MODE

**AUTO MODE - 1**

EXECUTIVE FILE:

AMOUNT WORKPIECE QUANTITY:

000000

Z

OPERATION MODE ☒ RUN ☐ TEST RUN

AFTER JOB FINISHED, USE ☐ CLAMP ☒ RELEASE

FIRST CUT LENGTH 00.00 mm

BLADE THICKNESS: 00.00 mm

START

CYCLE STOP

TO OPERATION  
MODE

It shows the present status of saw cutting

- a. **TO OPERATION MODE**: the touch panel shows the operation mode when you press the button
- b. **Z**: it can reset the quantity to zero when you press the button
- c. **CYCLE STOP**: The machine will stop the action after a cycle run when you press the button
- d. **START**: the machine executes cycles automatically when you press the button
- e. **OPERATION MODE**: when you press the button **RUN** the machine will stop without material; when you press the button **TEST RUN** the machine will not stop without material
- f. **AFTER JOB FINISHED, VISE**: press **CLAMP** that vise will not release the object; press **RELEASE** that vise will release the object.

### 5.3.5 Edit mode

EDIT MODE

TO OPERATION MODE

FILE NAME:

PRESET BLADE THICKNESS: 00.00 mm

FIRST CUT LENGTH: 00.00 mm

| No. | PRESET CUTTING LENGTH (mm) | PRESET QUANTITY |
|-----|----------------------------|-----------------|
| 1   | 0000.00                    | 00000           |
| 2   | 0000.00                    | 00000           |
| 3   | 0000.00                    | 00000           |

- TO OPERATION MODE: the touch panel shows the operation mode when you press the button
- PRESET BLADE THICKNESS: input the blade thickness into the ##.##mm table
- FIRST CUT LENGTH: input the first cut length into the ##.##mm table

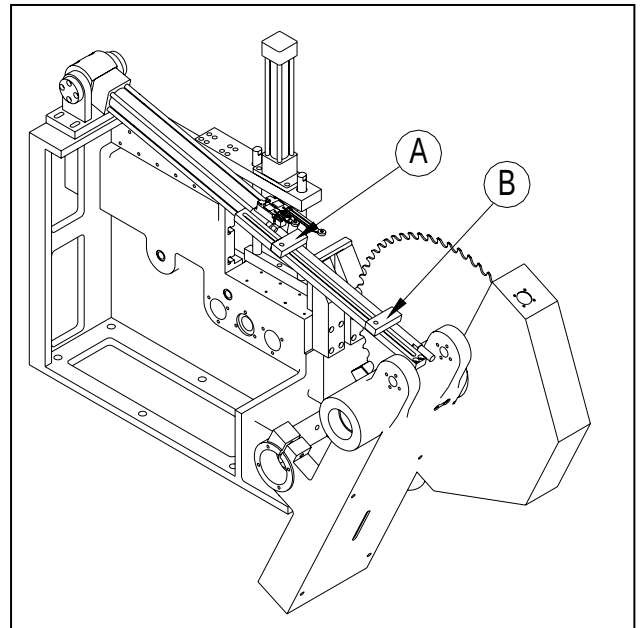
Input the cutting length and the quantity, if don't need other module you can set the value to zero.



## 5.4 Components and adjustments

1. feeding and withdrawal limitation adjustments

As shown in right figure, you can adjust withdrawal limitation by moving A, and you can adjust feeding limitation by moving B. The



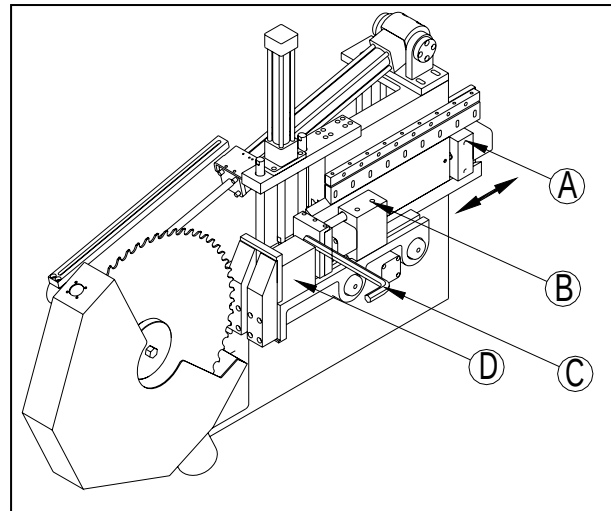
feeding limitation should be in front of the work piece 5-10 mm. The withdrawal limitation should be in back of the work piece 10-15 mm. In adjustment procedure, you can put work piece into the machine where the blade can reach it. Change the machine to manual mode, and you feed the blade forward until it cuts work piece over 5-10 mm. Adjust A just to touch the slight motion switch. You will hear a “click” when you touch the switch. Change the machine to manual mode, and you draw back the blade until it leaves work piece around 5-10 mm. Adjust B just to touch the slight motion switch. You will hear a “click” when you touch the

switch. After you follow above steps, you finish the feeding and withdrawal limitations adjustments.

**Caution: Incorrect adjustment will induce danger.**

## 2. the vise adjustment

In the right figure, you can release screws A and B. Then you can adjust the position of the vise along the direction of the arrowhead. C is the M8 die

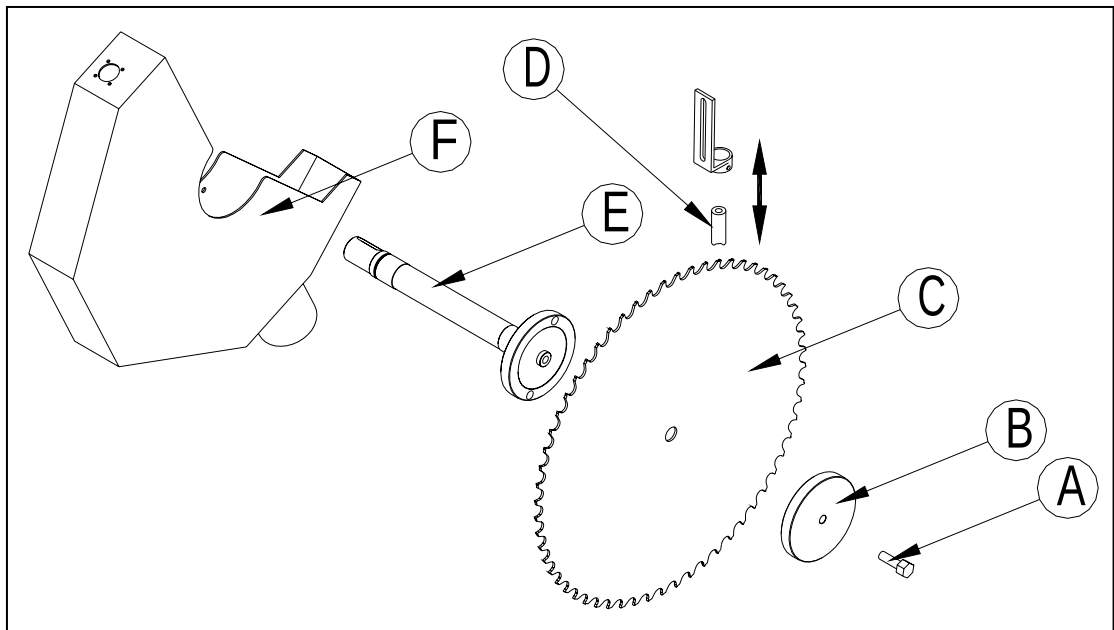


stock which is used to release screws A and B. D is the work piece, and you can release the vise by hands.

You can put the M8 die stock between the work piece and the chunk when you do the adjustment. Let the chunk just touch the M8 die stock; take out the M8 die stock, and then lock screws A and B. Lock the vise by hands, and check up that the work piece whether is locked tightly and non-deformed.

**Caution: Incorrect adjustment will induce danger.**

### 3. install the saw blade



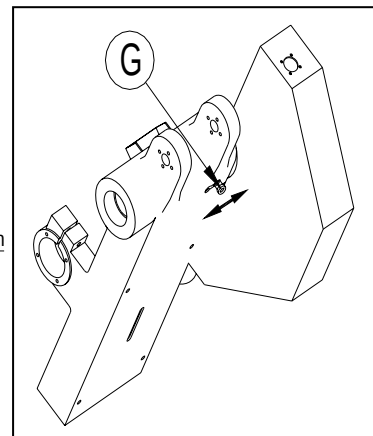
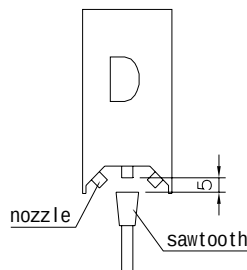
a. As shown in the above figure, you can open the F, and

clean surfaces of E,

C, and B. Put C

into E and adjust

the position of D along the  
direction of the arrowhead. Let



D is 4-6 mm away from the saw blade, and avoid

cutting by the saw blade, and then fix the position

of D after adjustments.

b. Fix B into E by locking A, and cover with F.

c. As shown in the right figure, when you lock A that you

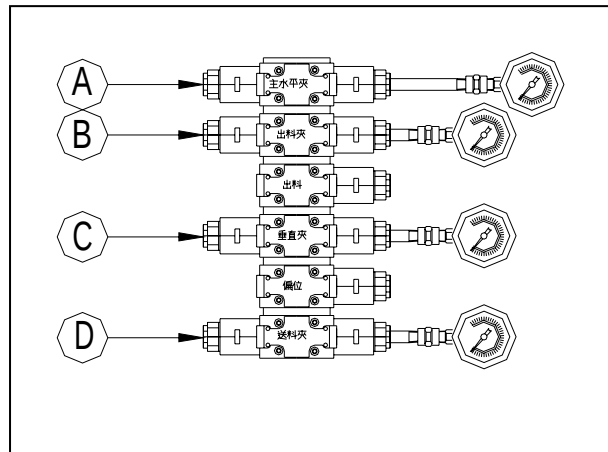
move G right according to the direction of the arrowhead. It can fix E and it has benefit for locking tightly.

d. After locking that you can move G to the left side.

**Caution:** If you don't move G to the left side that system doesn't allow turning on the power.

#### 4. the pressure regulation

In the right figure,  
the pressure of  
the vise can be  
adjusted as  
following



a. to regulate the pressure of horizontal vise to  
20~35Kg/cm<sup>2</sup>

b. to regulate the pressure of work piece draw-out vise to  
20~35Kg/cm<sup>2</sup>

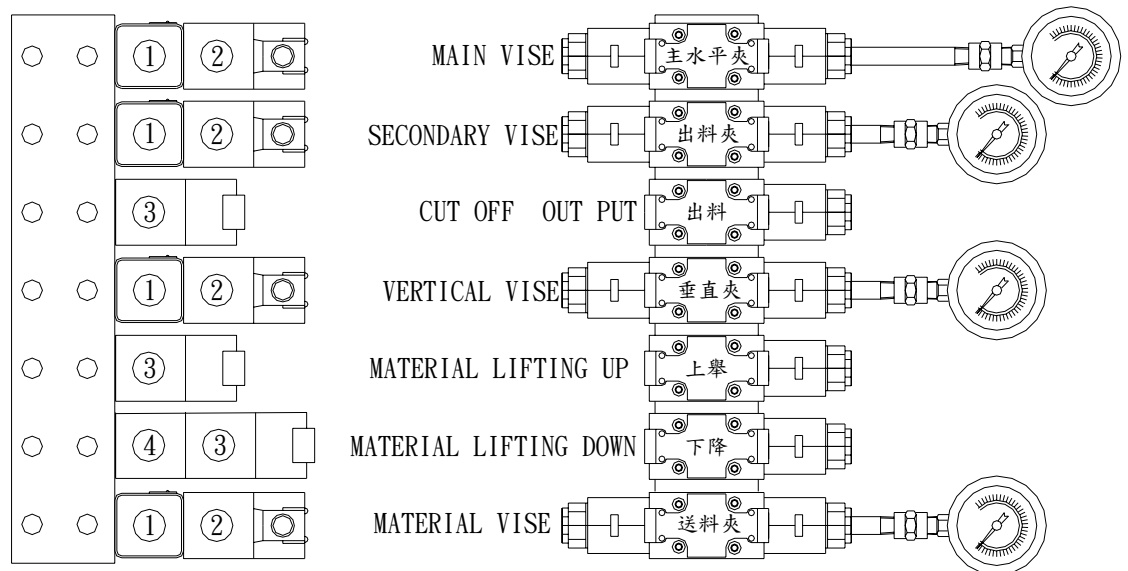
c. to regulate the pressure of vertical vise to 20~35Kg/cm<sup>2</sup>

d. to regulate the pressure of material vise to  
20~35Kg/cm<sup>2</sup>

**Caution: Incorrect pressure adjustments will destroy the work piece.**

## 6. Configuration of Oil Pipeline Components

1. 減壓閥 REDUCING
2. 電磁閥 CONTROLLED VIA DIRECTIONAL VALVE
3. 電磁閥 CONTROLLED VIA DIRECTIONAL VALVE
4. 引導止逆 CHECK



1. 引導止逆 CHECK
2. 電磁閥 CONTROLLED VIA DIRECTIONAL VALVE



## 7. Oil Pipelines Diagram

## 8. Wiring Diagram

## 9. System Diagram

## 10. Appendix

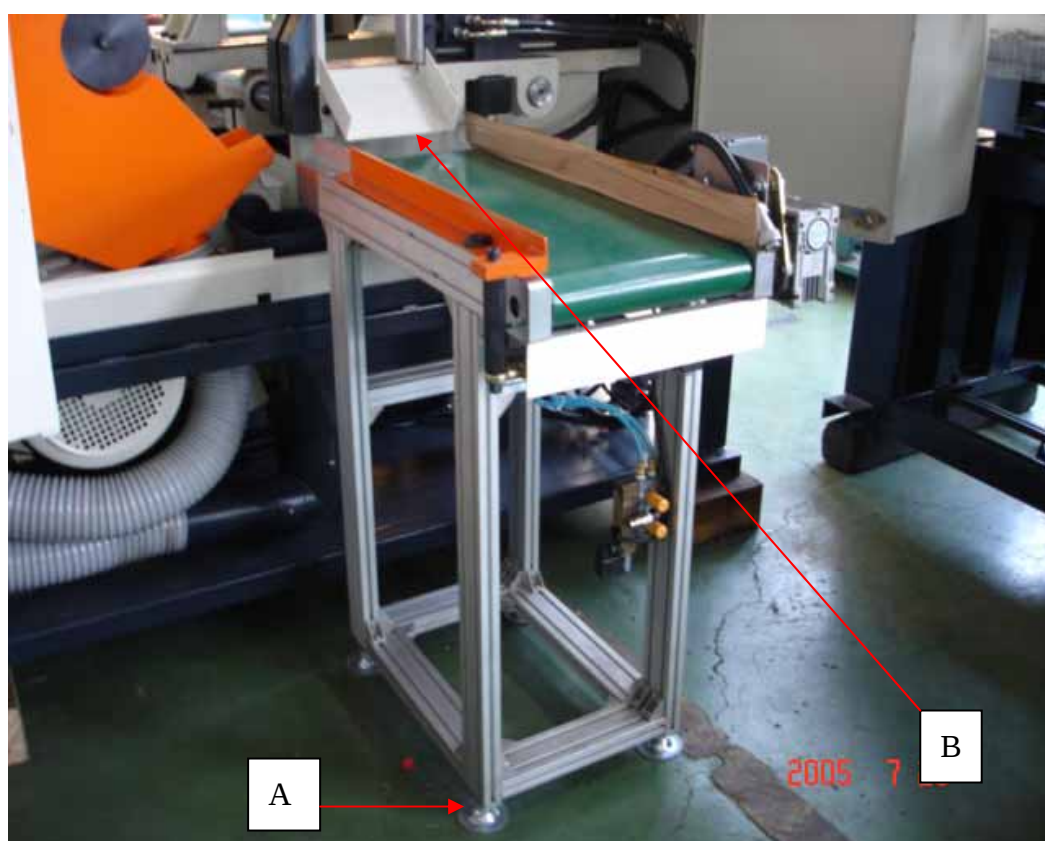
### 10.1 Delivery frame (ODU500)

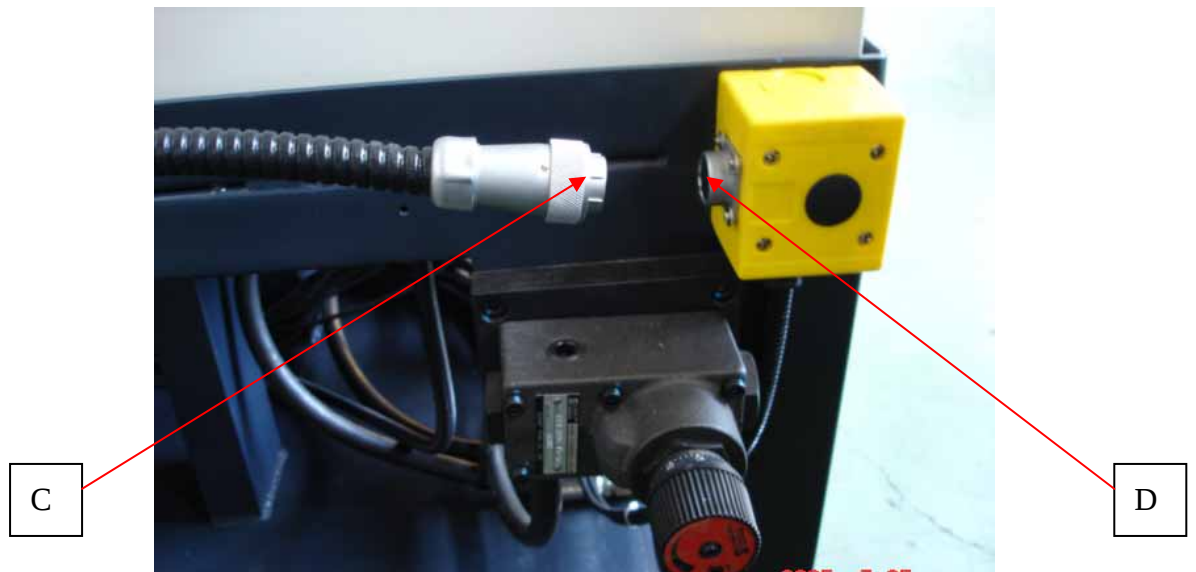
#### 10.1.1 Description

Delivery frame is an optional accessory. It delivers long work pieces automatically after cutting.

#### 10.1.2 Install

Link up connector **C** and **D**, and adjust appropriate height by device **A**. (there is 5-10 mm distance at **B**)





## 10.2 Vacuum cleaner

### 10.2.1 Description

Vacuum cleaner is an optional accessory. It sucks small pieces produced by cutting.

### 10.2.2 Install

Connect vacuum cleaner pipe with machine at **E** and lock it.

Plug the power supply **F** and finish installation.

E



F

